

Amendment  
Application No. 10/809,809  
Attorney Docket No. 042278

**REMARKS**

Claims 1-14, 16, 17, 19 and 21-24 are pending in the present application. Claims 1-8 have been withdrawn. Claims 9 and 16 are herein amended. Claims 15 and 18 are cancelled. Claims 21-24 are newly added.

**Claim Rejections**

Claims 9-12 and 14-19 were rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Kishi** (U.S. Patent 6,133,605); and claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kishi in view of **Kataoka** (JP 2003-32009) or **Olsen** (U.S. Application Publication 2005/0130448). Favorable reconsideration is requested.

Applicants respectfully submit that Kishi does not disclose:

forming a silicon nitride film or high dielectric constant film over said nitrogen-introduced silicon oxide film by a deposition method without oxidation of said nitrogen-introduced silicon film, **immediately after said step of introducing nitrogen and displacing silicon atoms**

as recited in amended claim 9 and similarly recited in claim 21.

The Office Action takes the position that the step of forming the silicon nitride film 5 disclosed in Kishi corresponds with the above claimed feature. (Office Action, page 4, citing Kishi, col. 9, line 23; Fig. 11.) However, in Kishi, after the step of nitriding the silicon oxide film 24 to form the silicon nitrided oxide film 3, oxidation is effected in a nitrogen atmosphere containing about 0.2% oxygen to form an oxygen-rich silicon nitrided oxide film 4. (Col. 9, lines 8-14; Fig. 10; *see also* col. 12, lines 20-26; Fig. 20.) The silicon nitrided oxide film 3 and the

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oxygen-rich silicon nitrided oxide film 4 together form the tunnel insulator film 31. Then a memory nitride film 5 composed of a silicon nitride film is formed over the tunnel insulator film 31. (Col. 9, lines 23-29; Fig. 11.)

The reason for this extra step in Kishi is because Kishi relates to a transistor consisting of a memory portion of a memory device.

By contrast, in the present invention as recited in claims 9 and 21, a film like the oxygen-rich nitride oxide film 4 in Kishi is not needed. The present invention does not relate to such a transistor consisting of a memory portion of a memory device as disclosed in Kishi.

In Kishi, it is necessary to form the oxygen-rich nitride oxide film 4 by oxidation between the silicon nitride oxide film 3 and the memory nitride film 5. Therefore, the memory nitride film 5 is not formed “immediately after said step of introducing nitrogen and displacing silicon atoms” as recited in claims 9 and 21.

Applicants respectfully submit that Kishi does not disclose:

introducing nitrogen into said silicon oxide film, displacing silicon atoms on a surface of said silicon substrate in a region where a conductive type of said surface is P-type below said gate insulation film toward said gate insulation film side, **and** displacing silicon atoms on said surface in a region where said conductive type of said surface is N-type below said gate insulation film toward an inner side of said silicon substrate

as recited in claim 12.

Kishi discloses individual embodiments, one embodiment having an N-type substrate and the other embodiment having a P-type substrate. (*See* Kishi, col. 12, lines 40-49). Kishi describes an N-channel MOS transistor and a P-channel MOS transistor. However, the

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descriptions are independent from each other. In other words, there is no description that the N-channel MOS transistor and the P-channel MOS transistor are formed together, with the displacing directions of silicon atoms being opposite to each other. Kishi does not disclose both types in one embodiment.

Therefore, Kishi does not disclose displacing silicon atoms on a P-type region below the gate insulation film toward the gate insulation film and displacing silicon atoms on an N-type region below the gate insulation film toward an inner side of the silicon substrate as recited in claim 12.

Claims 10, 11, 13, 14, 16, 17, 19 and 22-24 are patentable over the cited references for at least the same reasons that claims 9, 12 and 21 are patentable over the cited references by virtue of their dependence, directly or indirectly, from claim 9, 12 or 21.

Accordingly, withdrawal of the rejections of claims 9-14, 16, 17, 19 and 21-24 is hereby solicited.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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